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THE VEGETATION OF THE ILLINOIS LOWLANDS.

BY PROF. GEO. H. PERKINS.



THE vegetable life of Illinois presents many points of general interest, and these are nowhere else so prominent or peculiar as over the broad, level tracks of moist land so often bordering the large streams of the West. These lowlands or, as locally termed, "bottom lands" or "river bottoms," are of very variable extent, their limits being determined for each stream by the character of the region through which it takes its course. In one part of the river they are many rods in width and follow it for miles; in another they are narrow and soon end, and again they are wholly wanting, as when bluffs come to the water's edge and form rocky or gravelly banks. This is finely illustrated in Northern Illinois, where along the Mississippi are high banks with many an outcropping cliff of Galena or Niagara limestone. These cliffs have weathered into forms so strangely like half-ruined fortresses that it is not easy to believe that yonder bit of wall, half concealed by vines and shrubs, this crumbling turret, or those broken battlements, are but rough masses of rock. In passing from the extreme northern part of the state southward, we find the hilly, uneven surface growing smoother and more like a rolling prairie, which it finally becomes, and this in turn giving place to the dead

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level of the flat prairie; yet the greater part of the northern third of the state is far from level, and the river bottoms, though often extending one or two, and in some places, five miles from the Mississippi, are not infrequently broken up by highlands. Nearer the centre of the state these lowlands are wider and less interrupted in their extent. From Rock Island to Quincy, and even still farther south, for a distance of over two hundred miles, bluffs do not form the shores of the Mississippi, except at intervals widely separated and for short distances. In many places the banks are formed simply of the washed out edges of great prairies that extend for many miles into the state. Often while the banks themselves are low, at varying distances from the water the ground rises in rounded hillocks or ridges, or masses of limestone jut out above the surface and form sharp cliffs, all known under the general name "bluff." Between the bluffs and the river the ground is generally low, moist and often swampy. Such lowlands along the great river are from a few rods to ten miles in width and, of course, many more in length. Similar, though less extensive lowlands, are found along Rock River, Illinois River and other lesser streams, and along the Iowa side of the Mississippi. Not all of these river bottoms are swampy, some are reached only by unusually great freshets and are very valuable as farm lands, the soil being the richest loam, others, but little elevated above the usual level of the water, are overflowed by every rise and may be not only swampy but dotted here and there with ponds, some of which are of quite large size. Sometimes these ponds unite, retain a permanent connection with the stream and, at low water, flow towards it with a slow current, forming what are called "running sloughs." Wherever the lowlands are flooded only at long intervals, or only every spring, when the stream is at its highest level, they are usually covered with forests which are made up of trees of large size and are singularly free from undergrowth. In midsummer, after the spring floods, when the ground has dried, a carriage may be driven through these forests for miles with very little inconvenience from bushes, or indeed from any obstacle. It is not easy to imagine such forests as ever formed of *young* trees, they seem to have always been large and old and stately as now. True temples of nature are they—the ground smooth and turf-covered as if carefully prepared for crowds of worshippers—the

grandly rugged columns of oak, maple, cottonwood, sycamore and many others, reaching far up to the leafy arches of the roof—the profound silence brooding over all, call the soul to humble adoration of the great Father of all. Except the occasional chatter of a squirrel, the tremulous, half frightened twitter of a bird, or the monotonous hum of an insect, scarce a sound is heard above the rustling of leaves, murmur of wind, or creaking of interlocking branches, sounds all of them only serving to make the silence seem the more profound. Undevout and inappreciative indeed must be the heart that can resist the sombre fascination of such a place, a place where, away from life's cares and vexations, away from human influences, surrounded by majestic trees, whose huge trunks by their ribbed and seamed sides tell of centuries of growth, while their tops, green and leafy, declare that the mystery of life and growth still goes on with unabated vigor, is found closest communion and fullest sympathy with nature. But there are broad tracts too wet to afford a suitable soil for the growth of forests. In such places only groves or belts of woodland are found. These cover the higher portions of land, while all around are wide marshes covered with tall reeds, sedges and grasses, and lowest parts filled by ponds.

After the high water of spring has subsided, the ponds are bordered by a belt of mud or sand, over which crawl hosts of *Paludinas*, *Lymnæas*, *Physas*, and other "snails," while just below the water's edge the more strictly aquatic *Unios*, *Anodontas*, *Planorbis* and the like are equally abundant, so that these places offer great attractions to the conchologist.

Although I have collected fresh water shells in many localities, I have never secured so rich a harvest of some of the larger species as in some of these sloughs. And specimens are not only abundant, but of large size and with unusually bright colors. Nor are these localities less inviting to the ornithologist. Quite a number of species of birds find in them a congenial home and abundant food, ducks in the water, and plovers, herons and the like along the margins of the ponds, and in the rank growth of sedges and grasses, or the copses of button-bush which afford them shelter, many a thrush and warbler, while over all, like an untoward fate, hovers the bird of prey. Passing these attractions, interesting as they are, without further notice, let us now devote

ourselves to a study of the botanical characteristics of the region. From early summer until late autumn many a rare and beautiful flower is here seen. Perhaps the finest display is in late summer, when, over the higher borders of the marshes, where the lowland rises to meet the upland prairie, grow hosts of purple phloxes, mints, pentstemons and many other species, while here and there, towering high over all the rest, are seen superb clusters of the rose-pink *Spiræa lobata*, well called "queen of the prairie." On lower ground and in more moist soil, are several species of gerardia with rose-purple flowers, some of the more delicate being exceedingly graceful, the whole plant covered with beautifully tinted flowers, being an airy panicle of bloom. Other species with yellow flowers and of less graceful habit are found on drier ground. With these charming plants are found blue lobelias, purplish or blue veronicas, white chelone and a large representation of polygonums or knot-grasses, with flowers of crimson, rose, white or greenish hues, most of them neither very attractive nor conspicuous individually, but when growing in masses the effect is often very pleasing, and in the case of *Polygonum amphibium* even brilliant, its deep crimson wands making many a pool bright and beautiful. Much taller than these are the umbelliferæ, some species of which rival small trees in size, the white flower clusters standing seven or eight feet above the ground. Not infrequently from some darker, shadier nook flashes the brilliant red of the cardinal flower, while just above the smaller herbs, sometimes like a cloud of variegated mist, wave the panicles of purplish, yellowish or greenish grasses and sedges, the light green of the wild rice being often especially noticeable. In the water, besides many of the grasses and sedges, are found pennywort, several species of ranunculus, sagittaria, pontederia, lemna, azolla, peltandra, beautiful pond lilies, which seem to attain their largest size in this region, and many other plants of similar habit. Among these smaller species, or by itself alone, grows the great nelumbium, giant among our aquatic plants, of interest because of its kinship with the Egyptian lotus. This covers many acres, often extending for several miles in great patches. The large cream-colored corollas, standing often five or six feet above the water, are very conspicuous and attractive, as are also the leaves, their great disks, one to two feet in diameter, lying on the surface of the

water or raised somewhat above it. The upper surface of these leaves is of the most exquisitely shaded, velvety green, with which the much lighter shade of the under side contrasts in a most pleasing manner. In the fall the flowers give place to the huge conical seed cases, holding in cup-like depressions on the flat upper surface acorn-like seeds, which, in days gone by, furnished an important article of food to the Indians. Not infrequently small flocks of ducks are seen leisurely filing in graceful curves in and out of this lily forest, and more rarely a solitary blue or white heron stands dreamily gazing into the water, or lazily wings his way to the distant wood. But few song-birds are found in mid-summer in the immediate vicinity of the large ponds, though more common a little way from them, and often the silence is almost as complete here as in the great forests, the only sounds, perhaps, being the harsh call of a hawk or the sudden splash of a water rat or large turtle. If a knoll or other elevated position can be gained a wild scene often lies before the observer. All around him as far as the eye can reach lies the seemingly boundless sea of waving grass, the undulating surface only interrupted now and then by rounded clumps of the glossy-leaved button-bush (*Cephalanthus*), or more rarely by the tall form of a cotton-wood or other tree, while in the far distance the sky meets the moving surface, or a belt of trees forms a dark wall which limits the view, except where there are breaks through which are glimpses of the same billowy expanse stretching on and on indefinitely.

The state of Illinois extends from north to south over three hundred and eighty miles, and for this reason would naturally be expected to produce a very varied flora, as it certainly does both as to tree and herb.

In one of his works Humboldt mentions the tropical appearance of the forests of the Mississippi valley, due to the frequent occurrence of pinnate-leaved trees, and the palmate-leaved trees add greatly to the same effect.

In many of the forests there is a very noticeable absence of the higher cryptogams, such as ferns, club-mosses and mosses. Occasionally a great profusion of these plants is seen, but often one may ride for hours through rich, damp woods without seeing altogether more ferns than could easily be held in the hand, and the bright, rich green of mossy bank or moss-covered rock or log is not

often seen. It is not improbable that the germs, or young plants of these tribes are washed away and destroyed by the often recurring freshets, especially by the spring floods, but they are absent not only from the lowland forests, but as well from those on the uplands where no freshet ever comes. Here the drouth of summer may destroy them as too much moisture does in the lowlands. If we study the trees alone we find that the entire state affords not far from a hundred distinct species and varieties, besides about one-fourth as many shrubs. It would be out of the question to mention more than a few of the more important species here. Of the maples, the sugar and the silver, or white, are abundant, and of large size, sometimes reaching a height of a hundred and fifty feet and a diameter of eight or ten feet.

The red maple so common in New England very rarely occurs wild in Illinois, so far as I can ascertain. The oaks are represented by at least fifteen species and varieties, and in many places form the greater part of the forests and in new settlements they furnish most of the building material in place of the lacking pine and spruce. Of this tribe the most abundant and widely distributed are the white, red, and black oaks. The bur, swamp and post oaks, are common in some localities, as are the pin oak, chestnut oak and laurel oak, though they do not seem to be as universally common over the state as the three species first named. The scarlet oak and Spanish oak are probably the least common, except Lea's oak which occurs in Fulton county and perhaps elsewhere. Both species of *Nyssa* found in the Northern States are common in Southern Illinois but not elsewhere. The pawpaw, persimmon and pecan are found more or less abundantly over the southern two-thirds of the state, the first species occurring as a second growth sometimes in considerable quantity. There are several species of trees which are found either alone or in small groups or along the edges of groves, but they very rarely form groves by themselves. Those of this class which are most commonly found upon moist ground are, the honey locust, beautiful in form and foliage, at a distance one of the most attractive of trees, but hideous often for its huge clusters of thorns; the box-elder, or ash-leaved maple, with drooping branches that in large, solitary trees sometimes almost touch the ground, and in one or two such specimens I have seen almost perfectly regular domes, the base of

each nearly touching the ground; the buckeyes, which are very beautiful trees, the black walnut, butternut, and larger than any of those mentioned, rivalling the very largest of all our trees, the sycamore and tulip-trees, and more rarely in the southern part of the state two small trees, the two species of *Bumelia* or southern buckthorn. Besides the maples and oaks some of the largest trees found in Illinois are the cotton-wood, linden, red, green, blue, white and black ash, wild cherry, the various species of *Carya*, the American and red elm and some others. Many of these trees are found of very much larger size than is common in our New England forests, especially such as grow on the bottom lands. Here maples, sycamores, cottonwoods, etc., from a hundred to a hundred and fifty feet in height, and six to ten feet diameter at the ground are not uncommon, and now and then these dimensions are considerably exceeded. Even the sassafras, which in New England is a small tree, sometimes grows to a height of seventy feet. This species I have seen spring up as a second growth and so completely cover several acres as to exclude almost every other tree or shrub. The willows are well represented all over the state, though I have never seen them covering very wide tracts, as in some parts of the country. Both on the lowlands along the borders of small streams, and on the upland prairies the wild plum is common, and in similar localities clumps of wild apple are found. Both of these trees are very beautiful when in bloom, especially when together, the pure white of the plum and the pink of the apple blending finely while the delicious fragrance of the latter perfumes the air far and near. The birch, so commonly found in New England woods, is rarely found in Illinois, and only one species, the red birch, is found at all. Evergreens, which constitute so marked a feature in many landscapes, are often wholly wanting in Illinois scenery. The red cedar is found sparingly in many parts of the state, and on rocky ridges in the Northern counties the white cedar grows. Sometimes, too, the white pine and dwarf juniper are seen. One more species completes the list of coniferæ, the bald cypress, which grows along the Ohio and Mississippi, in the Southern counties where it occupies great swamps, its straight trunk towering for a hundred and fifty feet above the ground. This tree is very valuable for timber, though from its habits and

place of growth it is not as easily obtained in large quantities as trees growing in drier soil, and without its sometimes almost impassible barricade of roots, arching and twisting above the surface of the swamp, and amid these the massive trunks of fallen trees.

Grand indeed are many of these old trees in their rugged bark and the green and gray of moss and lichen, while some are not only grand but very beautiful as they are overhung with delicate or heavy arabesques of clinging vines that sometimes hide completely the rudeness of their support, and sometimes but partly cover it, while making that which is not concealed all the ruder as it contrasts with their own grace. There are many more species of twining plants and vines growing wild in Illinois than in New England, and, as with the trees, so with the vines, our familiar friends are so large and luxuriant that we scarcely recognize them. The poison ivy, Virginia creeper, or woodbine, and wild grape are all found there and are largest of the vines. They often completely cover, not only the shaft of a tree, but its top as well, sometimes so tightly embracing their support as to destroy it. They reach the very top of the highest trees, and are found with stems a foot or more in diameter near the ground. Not always do these climbers cover and destroy green and living trees, often their fullest beauty is reached as they drape the naked, seared trunk from which life has long since gone, thus changing the unsightly and uncouth into noble shafts of living green. Besides these giant vines there are many smaller and more delicate. Some of these, as the wild yam, moonseed, hop, four or five species of smilax, or greenbrier, and other allied forms which are beautiful for the green of their foliage and attractive mode of growth, but with inconspicuous flowers, fill many a thicket with masses of tangled cords. Others have the double beauty of foliage and flowers, the grace of pendant branch and twining stem being completed in the more splendid charm of clusters of flowers. Chief of these, as it is chief of all our native vines, is the Wistaria, found native in Southern Illinois. Superb is this vine when of large size and in the full glory of bloom, the large clusters of rich purple flowers hanging thickly over the soft green of the leaves. Yet more showy, though less elegant, is the Bignonia, or trumpet creeper, as its clusters of orange buds and flowers gleam like some bright

fruit from amid the branches of a tall tree or, unexpectedly flash out from the interlacing branches of the thickets in which it loves so well to grow. Less showy climbers and of smaller size are several species of clematis, the wild passion-flower, cypress, morning-glory, and all the rest, each with its own peculiar beauty of flower or leaf, sometimes growing alone, sometimes intertwined about the same tree with several others, uniting their various hues, the charms of each brightened by those of the others and all forming a variegated, harmoniously tinted mass delightful to see. In the dreamy midsummer when all nature's influences incline to reverie and repose, no place can be more fascinating than the wild regions of which we have been speaking. More than elsewhere in the shaded walks of the ancient forests, is there a coolness and freshness most grateful to the body, and a freedom from care, a retirement and a restfulness, as grateful and soothing to the mind. Not those who have flitted hither and thither over the railroads of the West, not even those who have sailed on its great rivers, have an adequate idea of the peculiar modes in which nature expresses herself in those regions, but only to those who have, alone and on foot, wandered for miles and miles amid the forests, over the plains, through the marshes, held by the love of nature, is it given to know her in her friendliest moods.



THE POTTERY OF THE MOUND BUILDERS.

BY F. W. PUTNAM.

[Concluded from June Number.]



Nos. 7759, 7760, 7787, 7788, 7789, 7790, 7791 and 7792 are water jars of various sizes and shapes, as shown in the four figures illustrating this group. 7759 differs from the others by being constricted in its upper portion. The neck of this jar is not preserved, but was probably like the restoration given in the figure. The diameter of greatest bulge of this vessel is from 6 to 6·2 inches. The constricted portion is about 3·3 in diameter, and the upper bulge is ·5 of an inch more than the constricted part. The present height (without the neck) is 5·5 inches.